

ANDALUSIA IN A MAP: ASSESSMENT OF AN EDUCATIONAL EXPERIENCE

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Abstract

Introduction

The Institute of Cartography of Andalusia, created by the Decree 116/ 1993 of 7 of September and assigned to the Council of Housing and Territorial Ordering of the Andalusian Government, is the organism responsible of programming the basic and derived cartography of the Andalusian Region, as well as the coordination of the thematic cartography and of the geographical data bases of this territory. This, together with the public vocation of the cartographic activity, causes that this institution considers a high-priority to offer the citizenship the products and services of this work, facilitating its access, in terms of equality, and using for adapted technological supports.

In this sense, the Institute of Cartography of Andalusia is working lately in the production and diffusion of didactic and educative material, in order to spread and to encourage the use of the cartography in a specific group, students, who generates an important demand that has not been always well assisted.

Within this working approach and on the celebration of the Day of Andalusia (28 of February), a School Competition "Andalusia in a map" is announced annually. This year has also been celebrated, with great success of participation, it was the third edition and the fourth is already being organised.

Objectives

The main objective of the presentation is to analyze the experience "Andalusia in a map" and evaluate in which extent this experience answer the goal with which annually it is summoned. The goal is to approach the participants to the importance of the cartographic representation as a pedagogic tool to transmit information and as an element of identification of the students with their territory.

Methodology

During the work, besides an analysis of variables like: sex, age, education level or the origin of the participants, some questions will be approached: the principal subject matter on the maps (history, culture, geography, etc), the represented areas (region, province, district, municipality), the used materials and formats, as well as other geographic questions: toponymy, legend, orientation, scale or the contextualisation of the map in the territory if its exists. We also will incorporate aspects like the activity evaluation by the teachers, or some anecdotes during the development of the competition.

Results

The results of the investigation are based on the quantitative interpretation of all these variables evaluating if the presented works rely on the fundamental rules of the cartographic criteria.

Conclusions

We try to demonstrate that the didactic and methodologic approach that sets out, through “Andalusia in a map”, although it is a playful proposal it is also a way to break the routine, to stimulate the students, and to enrich and to speed up the education-learning processes. This will influence the students learning about the compatible matters to the cartography which are considered basic in the different levels of the academic curriculum.

ANDALUSIA IN A MAP: ASSESSMENT OF AN EDUCATIONAL EXPERIENCE

Geographical and institutional context

Located to the south of the Iberian Peninsula, Andalusia is one of the 17 Autonomous Communities into which the Kingdom of Spain is administratively divided. Andalusia, which has a surface area of about 87,500 km² and more than 8.2 million inhabitants, is characterised by great geographical variety (coastal and inland areas, plains and mountainous zones, desert areas and perpetual snows, etc.). Its strategic location along the Strait of Gibraltar, which is only 14 kilometres wide, has allowed the region to act as a bridge between Europe and Africa, and a place where different civilizations (Greeks, Phoenicians, Romans, Islam, etc.) have passed, coexisted and clashed throughout its history. As a result, Andalusia boasts a rich and varied heritage (monuments, culture, traditions, etc.), which, together with its geographical and natural diversity, gives the region a distinctive personality.

Andalusia, constituted in Autonomous Community in 1981 under the Spanish Constitution, enjoys legislative autonomy, broad executive powers and its own government.

Against this background, the Andalusian Cartographic Institute, established by Decree-Law 116/1993 of 7 September, and currently attached to the Regional Ministry of Housing and Spatial Planning of the Junta de Andalucía, bears responsibility for elaboration both basic and derived cartography and planning and coordinating thematic cartography and geographical databases related to its territory.

The Andalusian government's commitment to public service in terms of cartographic activity is such that it considers a priority to provide citizens with products and services related to this activity, facilitating equal access through various technological means and media to ensure the widest possible dissemination and availability. This commitment is set out in the Andalusian Cartographic Plan, a document intended to guide cartographic activity in the Autonomous Community towards a planned model that is primarily based on accuracy, efficiency, interinstitutional cooperation and accessible information.

Against such a background, the Andalusian Cartographic Plan considers a priority to support both its own and third-party initiatives which seek to encourage the use of geographic information, and to disseminate in particular those actions which highlight the added value of the information or its educational content.

The Andalusian Cartographic Institute has been working to this effect for some time, producing didactic and educational material as a means to disseminate and encourage the use of cartography in schools. One of its major projects is the “Andalusia in a map” school competition.

Andalusia in a map

The “Andalusia in a map” initiative, which is already in its fourth edition, is an annual competition that targets non-university students, and takes place on the Day of Andalusia.

The primary objective of the competition is to promote the creative representation of the Andalusian territory, taking advantage of the potential of cartography as a vehicle for conveying information, as a pedagogic tool, and as a resource to encourage student's sense of ownership and identification with the territory.

The event has thus far been an open theme competition. The only requirement is the use of a map to highlight aspects of Andalusian geography, history, culture, natural diversity, festivals, traditions or people of any of its eight provinces or various districts and towns.

The call has likewise been open to all public, private and state-assisted, Primary, Secondary, Baccalaureate, and Special Needs schools¹, Lifelong Learning² and Special Education Schemes³ in Andalusia.

The call is delivered to educational institutions around November, and the awards are announced on the eve of the Day of Andalusia (28 February). The competition therefore runs for about three months.

With the call underway, the “Andalusia in a map” competition is conducted in two stages. The first stage takes place in the educational institutions, where the three best works from each educational level, and for each category set out in the rules, are selected. The second stage begins when the selected works are delivered by the educational institutions to the Andalusian Cartographic Institute to take part in the regional contest, where the works are assessed by a panel of judges convened to grant the awards. The winners are awarded a diploma, drawing material, a collection of books for the educational institution, and a group trip for the class of the winning students.

The finalists and winning works will not only be published and showcased on the websites of the Regional Ministry of Housing and Spatial Planning and the Regional Ministry of Education, but shall also be included, at the request of the educational institution concerned, in a travelling exhibition and published as a postcard collection.

The Andalusian Regional Ministry of Education has also worked closely in this project with the Andalusian Cartographic Institute as consultants, and participated in all cartography-related activities aimed at the learning community.

Participants

Although the total number of participants at the educational institutions remains uncertain, the number of works delivered to the Andalusian Cartographic Institute makes it possible to estimate the initial level of participants in 8000 students for the past three editions.

This figure is based on the following assumptions: 25 students on average per class, only one participating class per institution, and compulsory selection of 3 works to be submitted to the regional competition by the educational institution. Given that 1000 works made it to the final stage, one need only apply the rule of three to assess the huge interest in the competition.

¹ It targets students with special educational needs owing to a very high IQ or mental, physical or sensorial disability.

² Primarily, adult literacy.

³ It covers mainstream education such as arts (music and dance, performing arts, fine arts and design) or languages.

Focusing on participation during the regional stage, of which we have more information and data, 974 people from different educational levels made it to the final stage in the last three editions as shown in the table below:

Table 1. Participation by educational level

| Category | 1st Edition | 2nd Edition | 3rd Edition | Total participants | Total students | Ratio of participation (%) |
|-------------------|-------------|-------------|-------------|--------------------|----------------|----------------------------|
| Pre-school | 18 | 8 | 27 | 53 | 350,000 | 0.15 |
| Primary | 180 | 48 | 139 | 367 | 540,000 | 0.68 |
| Special Needs | 6 | 0 | 7 | 13 | 6,000 | 2.17 |
| Secondary | 206 | 92 | 186 | 484 | 390,000 | 1.24 |
| Lifelong Learning | 19 | 4 | 9 | 32 | 105,000 | 0.31 |
| Baccalaureate | 12 | 1 | 6 | 19 | 230,000 | 0.08 |
| Special scheme | 4 | 1 | 1 | 6 | 100,000 | 0.06 |
| Total | 445 | 154 | 375 | 974 | 1,721,000 | 0.57 |

Source: Own development

As shown in the above table, although most participants belong to educational levels with the highest number of students, i.e. compulsory primary and secondary education, it does not mean that the participation of other groups was low. In fact these figures, when put into context of the total of students in each educational category in the last school year, reveal that the highest number of students belong to Special Needs.

It should also be noted that participation dropped in the second year of the competition due to failings in the dissemination of the call.

The third edition took advantage to invite to the students of Andalusia to participate in the present call of the international contest “The Barbara Petchnik Children's Map Competition”, having itself has been received 40 works.

It is also important to mention that, other than several collective works (barely 6%), more females (58.8%) than males (35.22%) participated in the competition, which is in itself interesting as there are slightly more male than female students in the educational levels with higher participation (primary and secondary). It can therefore be inferred that, given the number of works that make it to the regional stage, the quality of female works is higher.

Table 2. Participation by gender

| Category | 1st Edition | 2nd Edition | 3rd Edition | Total participants | Ratio of participation (%) |
|------------|-------------|-------------|-------------|--------------------|----------------------------|
| Collective | 27 | 14 | 17 | 58 | 5.95 |
| Women | 257 | 84 | 232 | 573 | 58.83 |
| Men | 161 | 56 | 126 | 343 | 35.22 |
| Total | 445 | 154 | 375 | 974 | 100.00 |

Source: Own development

In terms of the number of participating institutions, in spite of the prevalence of public institutions, the participation of private institutions was also significant. In fact these figures, when put into context of the total number of public and private institutions in Andalusia, reveal that the ratio of participation is very similar.

Table 3. Educational institutions by ownership

| Ownership | 1st Edition | 2nd Edition | 3rd Edition | Total participating schools | Total institutions ⁴ | Ratio of participation (%) |
|----------------------|-------------|-------------|-------------|-----------------------------|---------------------------------|----------------------------|
| Public institutions | 99 | 47 | 92 | 208 | 4,494 | 4.63 |
| Private institutions | 26 | 9 | 35 | 59 | 1,475 | 4.00 |
| Total | 125 | 56 | 127 | 267 | 5,969 | 4.47 |

Source: Own development

It is also important to mention the repeated participation of several educational institutions. Out of the 267 institutions that have submitted works in the past three editions, 5 have participated in every competition and 31 in at least two.

In terms of geographical location, educational institutions from all Andalusian provinces have participated, with Almeria and Jaen being particularly active relative to their school population. Conversely, Seville, Malaga and Cadiz, the three most populated provinces, stand out at the opposite end.

Table 4. Participation by geographical origin

| Province | 1st Edition | 2nd Edition | 3rd Edition | Total participants | Total students | Ratio of participation (‰) |
|----------|-------------|-------------|-------------|--------------------|----------------|----------------------------|
| Almeria | 47 | 26 | 57 | 130 | 143,000 | 0.91 |
| Cadiz | 34 | 30 | 36 | 100 | 258,000 | 0.39 |
| Cordova | 46 | 15 | 55 | 116 | 170,000 | 0.68 |
| Granada | 83 | 15 | 21 | 119 | 197,000 | 0.60 |
| Huelva | 18 | 12 | 25 | 55 | 110,000 | 0.50 |
| Jaen | 60 | 29 | 44 | 133 | 141,000 | 0.94 |
| Malaga | 53 | 10 | 67 | 130 | 308,000 | 0.42 |
| Seville | 104 | 17 | 70 | 191 | 394,000 | 0.49 |
| Total | 445 | 154 | 375 | 974 | 1,721,000 | 0.57 |

Source: Own development

In the case of Almeria, it is also noteworthy that a sizeable proportion of participants (about 30) are inclined to represent only their province. This may be because the province is located in the far reaches of Andalusia and remote from the regional capital. It is also the only case in which the participants have never included individualised maps of other provinces in their works.

⁴The total number of institutions does not exactly match with the total of the three editions, as there are several institutions that have participated in more than one call.

Formats and materials

Although the competition rules state that works should be preferably submitted on a 420 x 297 mm (A3) sheet of paper, it leaves open the possibility for using other formats. In this regard, 89% of the works submitted comply with the size requirements of the rules. The other works use, in similar proportions, 297 x 210 mm (A4) or larger formats, though the latter is rarely used due to delivery constraints. Nonetheless, on more than one occasion, photographs have been accepted in lieu of the original work due to the sheer size (wall paintings) and/or characteristics of certain works.

In terms of materials and artistic technique, the rules are also in no way restrictive. This encourages the submission of works using a wide variety of materials (colour pencils, markers, wax crayons, water colours, oil paintings, modelling clay, plastic, fabric, cardboard, wood, clay, recycled materials, food products, etc.).

Although the techniques used are also diverse, in most cases they are drawings. Nonetheless, we also receive collages, scale models, marquetry, puzzles, electronic games, works with modelling clay parts, prototypes of what could be considered small GIS, since they provide information on overlaying layers, etc.

This wide variety of formats and techniques gives rise to shipment problems, as many institutions do not properly pack the works to preclude damage during transportation. In fact, it is not uncommon to receive works that have been irreversibly damaged. In order to preclude this situation, and if the nature of the work renders it advisable, we are considering the admission of photographs, as in the case of the larger formats, for consideration by the judges, even if this would mean that one cannot fully appreciate the original work.

Thematic content

The competition rules only require that all works include a cartographic representation of Andalusia or any of its provinces, districts or towns. Other than that, the theme is totally open. For this reason, a wide range of themes have been addressed over the past three years as shown below in the table where up to 20 major thematic categories are detailed.

Table 5. Classification of works by themes

| Theme | Number of works | Theme | Number of works |
|----------------------------------|-----------------|-----------------------------------|-----------------|
| Miscellaneous | 350 | Topographic map | 11 |
| Monuments | 159 | History-Civilizations | 9 |
| Political map | 92 | Roads | 7 |
| Physical medium | 74 | Interculturality | 6 |
| Economy | 55 | Football | 5 |
| Festivals and popular traditions | 38 | Philately | 5 |
| Nature reserves-Wildlife | 33 | City system | 5 |
| Celebrities | 26 | Climatology | 3 |
| Cuisine | 18 | Sustainability-Renewable energies | 3 |
| Coats-of-arm and flags | 18 | Gender equality | 3 |
| Regional costumes | 16 | Linguistic map | 1 |
| Urban street maps | 13 | Other | 24 |

Source: Own development

The most diverse category is Miscellaneous, with more than a third of works entered. The works under this category are characterised by maps which feature some combination of geography, history, culture, nature, etc. of the place represented.

The second most frequent theme category, the reproduction of Andalusian monuments, is somewhat more defined.

The political and administrative divisions of Andalusia, the representation of the physical environment (frequently in 3D), certain economic aspects, the most representative festivals and popular traditions, Andalusian natural reserves and its wildlife, or celebrities such as authors, painters or singers are some of the points most frequently addressed.

Furthermore, some 10 to 20 works also address topics such as Andalusian cuisine, coats-of-arms and flags of provinces and capital cities or typical Andalusian costumes and attires.

There are also works that focus more on geographical aspects, such as street maps for different regional cities, the road network or the current system of cities, climatology or, even, works with a more integrated approach that could be considered small-scale topographic maps. In this regard, it is important to mention a small atlas comprised of seven thematic maps.

Football and the different regional teams, certain historical events (the discovery of America, Andalusia as a cross-road of cultures and civilizations, etc.), matters related to sustainability (recycling or renewable energies), interculturality (Andalusia as a land of immigration) or gender equality are other topics of minority interest that are addressed by the participants with great creativity.

We never cease to be amazed by some participant's ability to deal with abstraction, who imagine Andalusia as a naked woman's torso or a guitar or a slice of bread.

Geographic areas represented

In terms of the geographic areas represented, 63% of the works take as their reference point Andalusia subdivided into provinces, whereas 15% represent the region as a whole.

The remaining works focus on one of the eight provinces (16%), a district (3%) or a local milieu (2%).

There are also several works that focus on the Guadalquivir River, the main artery that runs through Andalusia.

Table 6. Geographic areas represented

| Scope | | Number of works |
|----------------------------------|---------|-----------------|
| Andalusia as a whole | | 149 |
| Andalusia divided into provinces | | 615 |
| A province (155 cases) | Almeria | 34 |
| | Cadiz | 16 |
| | Cordova | 11 |
| | Granada | 17 |
| | Huelva | 11 |
| | Jaen | 22 |
| | Malaga | 19 |
| | Seville | 25 |
| Guadalquivir River | | 3 |
| A district | | 28 |
| A municipality or town | | 24 |

Source: Own development

Although Andalusia is not an island, it is interesting to note that more than half (51.5%) of the works represent the territory totally out of context, without taking stock of the surrounding spaces or making a distinction between its land borders and its coastline stretching more than 800 km.

On the other hand, 46% of the works contextualise the region correctly; however, only a handful (73 out of 449) included a geographical milestone as unique as the Strait of Gibraltar.

Another way of conceptualising the territory is by using two maps. The main map focuses on the key issue, and a smaller map illustrates the location within a larger geographical area.

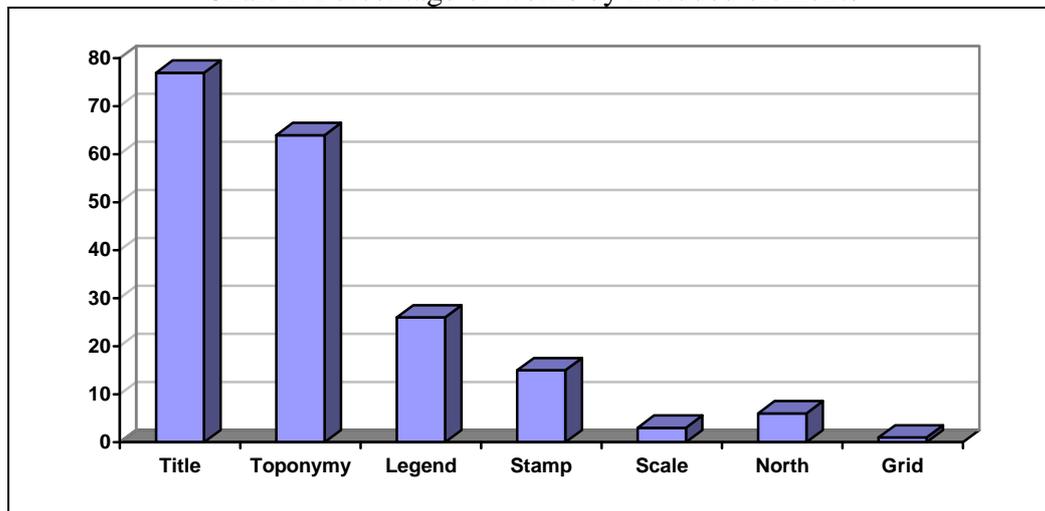
As for the other works, their interpretation of Andalusia is so abstract that assessment is not possible. Indeed, close to twenty works did not even include a map.

The way in which the reference map has been reproduced must also be considered. In this regard, 60.4% were freehand maps, 27.6% carbon copies of the original, and 12% stencil maps of varying accuracy.

Cartographic language

Another interesting point was whether the more common cartographic elements were included or not in the works. By and large, the participants did not pay much attention to this matter, despite the fact that this criterion is explicitly mentioned in the competition rules: appropriate use of symbols, colours, keys and other elements specific to maps (scales, north, title, legend, etc.).

Chart 1. Percentage of works by included elements



Source: Own development

Out of the elements to be included, the title was the most frequently used (77%) in the works, in addition to some type of toponymy (names of provinces, cities, geographic features, etc.), which appears in about 64% of works.

The use of legends or explanatory texts were somewhat less frequent, but not uncommon (26%), and in some cases were attached as a separate document due to its length. In fact, only 15% of the works had a legend box.

With a few exceptions, the maps are correctly oriented to the north; however, only 6% include a direction arrow or compass rose.

Scales were even more rarely used (3.3%), and spatial reference systems or grids were used only in one of the 974 works entered.

As a matter of interest, note that several works misarrange the cartographic outline or switched the orientation (north for south and east for west).

Assessment

In the last call (November 2008-February 2009), teachers were administered a survey questionnaire on different aspects of the competition, with a view to improving future editions. They were also asked to send in comments and suggestion to that effect.

When asked about their opinion on the “Andalusia in a map” initiative, most teachers described it as: interesting, innovative, wonderful, inspiring and timely. The reasons stated included that the competition allowed them to work on different aspects of the Andalusian situation, enhance one's knowledge of the territory, gain knowledge of areas in Andalusia other than those were one habitually resides, discover interactions, encourage creativity and individual/team work, and, in short, learn to use and interpret maps and acknowledge cartography's importance as a resource for conveying excellent information.

In response to the question on whether the competition is useful and beneficial for the students, the teachers predominantly agree that it is highly recommendable because it allows students to explore various issues, search different types of information, gain knowledge on cartography and broaden their (non-geographical) knowledge about their homeland. The competition also promotes students' creativity and ability to deal with abstraction, since they have to use their imagination to translate their ideas on a map.

According to the teachers, this activity elicited feelings of curiosity, illusion, motivation and interest in the students. It is also an initiative that supplements and complements the geography taught at school.

As to whether the student body enjoyed participating in the competition, the response was almost unanimously yes, although, in some cases, not all the students in a class participated or not all the students showed the same interest. This mild lack of interest contrasts with the interest shown by many institutions for the forthcoming competition. The teachers also mentioned the disappointment and dissatisfaction expressed by many participants when their work is not picked for an award. However, in this case, as in sports, the important thing is to participate, as this is the only way to gain knowledge that otherwise would be hard to obtain.

When asked about how to improve future editions, many, meaningful suggestions were made, including: the need to nail down certain rules, only one theme for each competition, award more and varied prizes, encourage comparisons between Andalusia

and other Spanish autonomous communities or countries, publish a monograph of the most outstanding works or provide incentives and acknowledge the teachers' efforts, since, when all is said and done, it is up to them to motivate the students and get them engaged in the activity.

Lastly, they were asked to rate the competition on a scale of 1 to 10. The grade assigned by the teachers was 8.2, a highly satisfactory grade that encourages the organisation to continue organising this type of activities.

Conclusions

Maps are an educational resource that is not always used adequately, because it is used either to identify features, or to teach certain things that the students are incapable of assimilating since they are not acquainted with cartographic language, which can be hard to understand.

“Andalusia in a map” seeks to remedy this situation, enabling the participants to interpret and represent the territory, and discover the existing interactions between different types of features. It encourages the use of a map as a versatile tool for promoting an alternative, meaningful way of learning away from repetitive and rote modes of teaching geography.

The cartography, and “Andalusia in a map” are a good example, not only they teach things of the place where it is lived. The maps harness the control of the space dimension: locations, scales, space continuity-discontinuity of phenomena, interrelations, etc; questions, all of them, basic for the academic formation and for the intellectual and personal development.

The warm embrace of the competition by the school community has, year after year, consolidated this activity, making this event a special milestone in the Andalusian Cartographic Institute's annual programme. This therefore encourages us to continue to support this type of activities and develop didactic material that will allow the school community to better use cartography.

In fact, in the new call some improvements in the relative bases have been introduced: to the redefinition of the categories to award, to the admission of photos like vehicle of participation for those works that by their format or its characteristics can be deteriorated in their shipment, or to the recognition of the fidelity and insistence to the centers that have participated in all the editions of the competition.

Our intention, with this and other initiatives that at the moment are being: didactic guide for the use of street maps, factory of cartography, collection of dumb-maps, etc, is an approach to the school community so that, as much students as professors, know that

they have to his disposition a great number of materials, that can be useful with educational aims, in their daily task.